

AN ABSTRACT OF THE THESIS OF

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Two topics concerning fisheries management are considered in this thesis. The first concerns the social values that commercial fishing communities associate with commercial fishing. A survey of residents from eleven Oregon Coastal fishing communities was conducted to examine the social values associated with the commercial fishing occupation and fishing heritage. Community and social values, as they are conceptualized in this study, refer to the attitudes, opinions, and beliefs held by fishers and non-fishers in commercial fishing communities. These values include sentiments about preserving existing ways of life, improving community services, attachment to place, maintaining the natural resource history of the area, and increasing economic opportunities.

The second topic examines the extent to which social and community values held by fishing communities are identified and integrated into fishery management decisions. There is little knowledge about the *process* by which this information is obtained or identified, or whether or not that information is useful -

information that could increase the ability of decision-makers, policy makers and managers to comply with the spirit of the amended Magnuson-Stevens Act. The ability in which fisheries managers and decision-makers incorporate, integrate and learn about social values associated with commercial fishing may depend greatly on their understanding of how these values are embedded within communities.

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Social Challenges in Managing Natural Resources
in Coastal Fishing Communities

by
Shayla B. Sharp

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TABLE OF CONTENTS

INTRODUCTION.....	1
MANUSCRIPT 1: Social Challenges In Managing Natural Resources In Oregon's Coastal Fishing Communities: Oregon Coastal Residents Views	6
Abstract.....	7
Introduction	8
Methods.....	10
Results	10
Discussion.....	27
References.....	32
MANUSCRIPT 2: Social Challenges In Managing Natural Resources In Coastal Fishing Communities: A Survey of Program Leaders, Decision- makers And Organizations In Fisheries Management In The Pacific Northwest	35
Abstract.....	36
Introduction	38
Methods.....	42
Results	43
Discussion.....	57
References.....	60
SUMMARY	62
BIBLIOGRAPHY	65

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1.1 Respondents ranking of the top 3 Quality of Life factors.....	24
2.1 Timeliness of social and community values information that managers and decision-makers receive.	48
2.2 How often managers integrate information they receive into decisions.	49

LIST OF TABLES

<u>Tables</u>	<u>Page</u>
1.1 Selected Demographics by Community.....	12
1.2 Perceived and Actual Employment in Commercial Fishing By Community	14
1.3 Should your community try to maintain the commercial fishing heritage of the area?	15
1.4 Percentage of People in Commercial Fishing: Increasing or Decreasing in Future	17
1.5 Responses to “why” the percentage of people in Commercial Fishing is decreasing somewhat or greatly in the future.....	18
1.6 Ranking the importance of commercial fishing past, present, and future.....	20
1.7 Mean Values for future quality of life variables.....	22
1.8 Ranking Quality of Life variables by employment in Natural Resource and Non-Natural Resource related occupation	26
2.1 Selected Demographics of Managers/Decision-makers	44
2.2 Frequencies of managers responses to the questions: Indicate how you are most likely to receive community and social values information from the list provided; and, What makes the information credible?	45
2.3 Whether or not there are barriers (time, format, quality) to receiving information, and the diversity of issues involved in receiving social and community values information.....	50
2.4 How important are social and community values in the decisions and policy-making process?	51
2.5 How information about community and social values have impacted decisions.....	53

LIST OF TABLES CONTINUED

<u>Tables</u>	<u>Page</u>
2.6 Managers response to: Should Oregon coastal communities maintain their commercial fishing heritage?.....	54

Social Challenges in Managing Natural Resources in Coastal Fishing Communities

INTRODUCTION

Community and social values have been identified as important variables to be considered in future fisheries management decisions as reflected in the Magnuson-Stevens Fishery Conservation and Management Act (M-SFCMA or Magnuson-Stevens Act, 1996). To fully understand the social impact of fishing policy on communities it is important to recognize that commercial fishing is more than an economically significant industry. It has cultural, historical and social value as well. Fishers (those who engage in the occupation of fishing including fish processors) and fishing families are only one of the many groups that make up a fishing community. The residential community of which fishers and non-fishers are part is socially important to the fishers and their families, as both groups are part of formal (business, commerce) and informal (education, neighborhood, church) social networks. People are rooted in a community or place through occupation, social and economic reasons. For commercial fishers and non-fishers this attachment to place may result in mutual community interests that both groups share (Cordray and Cramer, 1999). For instance, a common tie to the commercial fishing heritage may be important as it provides an environment in which fishers and non-fishers can identify and value. In other words, non-fishers may have strong sentiments about preserving the historical nature or heritage associated with the

fishing industry (Cramer, 1999). It also may be the case that non-fishers devalue commercial fishing and view its viability as a hindrance to future economic development.

Economic, occupational, and social relationships between fishers and non-fishers provide a means of integration and interdependence in and among community members, fishers, and natural resource management. This relationship is important for several reasons. First, fishers require local infrastructure for harbor or port access and maintenance. They need space along the docks and in the harbor to accommodate daily fishing activities (e.g. loading, unloading, maintenance, etc.). Local markets also need to draw visitors. For example, the city of Newport, Oregon attempts to provide a cultural and unique experience for tourists while supporting the fishing industry and the merchants along the bay front (Cordray and Cramer, 1999). Tourists can view active fishing boats leaving and entering the harbor, observe seafood processing plants in operation, and are able to buy fresh fish or crab directly from fishermen. The tourists that primarily come to see the fishing boats also buy goods from the local shops. Planning and development decisions that work to sustain multiple industries (merchants and fisheries) are more likely to do so when there is agreement in the community that these activities support the economic structure and contribute to the cultural aspects of the area (Cordray and Cramer, 1999).

Second, the relationships between fishers and non-fishers can play an important role in understanding and managing the complexities of fisheries. Fishers

have direct information about their resource in the form of local (or traditional) knowledge. Approaches to fisheries management have generally been scientific, technical and often inflexible. Incorporating local knowledge has not always been utilized to its fullest extent. In some regions, fishers' knowledge is considered "anecdotal" thus lacking scientific merit (Hall-Arber and Pederson, 1999).

In July of 1992, all fishing for northern cod in Canadian waters was stopped due to fish populations that had declined to near extinction. In this instance, changes in gear, habitat damage, ocean warming, confidence of data and data collection methods, and trust between fishers and fishery management all contributed to the decline. Comments from fishers who questioned policies about fishing quota had been disregarded by fisheries management for some time. Ignored were the fishers' perceptions about what was happening to their resource (Finlyason and McCay, 1998).

Stock assessment measures used by fisheries management to calculate populations of fish and the amount of landings or Total Allowable Catch (TAC) in order to set fishing seasons, limits and re-estimate populations, have been perceived as limited, inaccurate, or incomplete by both fishers and fishery managers (Darm, 2001; Moore, 2001; Acheson et al. 1998). For the Labrador and Newfoundland cod fisheries, errors in stock assessment and TAC had been grossly miscalculated from 1977 to 1985 by as much as 107%, and in one case by as much as 220% (Martin, 1985). The end result of management policies has resulted in dramatic impacts, not only on the fisheries, but also for fishers and fishing communities as well.

The Labrador and Newfoundland communities dependent on these fisheries, including 35,000 fishers and fish processors, were greatly affected (Finlayson and McCay, 1998). To what extent local knowledge, also called “anecdotal information,” could have played a role in mitigating some of the problems leading to the collapse of the fisheries is uncertain. Currently, there is no systematic means of collecting anecdotal information from fishers (Hall-Arber and Pederson, 1999). Reduced or halted harvests will mean lower incomes, fishers that have to go elsewhere to fish, and less income to circulate within those communities.

In the Pacific Northwest (PNW), the salmon crisis and the recent declaration by the United States federal government regarding the West Coast groundfish fisheries crisis will have negative consequences that will be felt throughout the region (OCZMA, 2000). It is a situation that somewhat parallels the Labrador/Newfoundland fisheries (1977-85) economically and socially. For several years, PNW fishers have requested federal assistance in changing the regulations that affect by-catch. By-catch are groundfish (rockfish, lingcod, etc.) that are unintentionally caught when fishing for another species. The Pacific Fishery Management Council (PFMC), which sets ocean fishing limits in the PNW, estimated that the groundfish catch on the West Coast has declined from a 20-year average of 74,000 tons/yr. to less than 36,000 tons in 1999. Total catch is expected to be near 27,000 tons in 2000 (NOAA, 2000). The losses to west coast fishermen have been estimated at approximately \$11 million in revenue, while the value of groundfish landings dropped from \$72 million in 1994 to \$52 million in 1998 (NOAA, 2000). Groundfish take a long time to mature and

reproduce which means long-term recovery for the various species. In both Labrador/Newfoundland and the PNW, species decline combined with traditional methods of fisheries management have left coastal communities with few viable alternatives for economic recovery.

Finally, understanding and incorporating the values that fishers and non-fishers associate with their natural resource should have a direct bearing on the management of that resource. Public participation is one of the ways in which community values and social concerns can be included in the management process, but interpreting and incorporating values into fishery management decisions becomes difficult if the public's value system is unfamiliar or ignored (Kennedy and Thomas, 1995). A discussion of the process by which community and social values information is obtained, interpreted and integrated by fisheries managers is explored in manuscript two.

MANUSCRIPT 1

Social Challenges in Managing Natural Resources In Oregon's Coastal Fishing Communities¹: Oregon Coastal Residents Views²

Shayla B. Sharp

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Abstract

The term “fishing community” as referred to in the Sustainable Fisheries Act, is defined as “[A] community which is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs” (PL-104-297 § 102). However, a fishing community is not just about fishing or economics. For fishers and non-fishers in coastal communities, fishing and ocean resources also represent expressions of social and community values. While the amended Magnuson-Stevens Fishery Conservation and Management Act (M-SFCMA, 1996) formally gave recognition of the need for examining social characteristics of fisheries, the decisions that are made by fisheries and natural resource managers typically reflect economics and policies, not community values. Commercial fishing has cultural, economic, and historical significance that is managed intensively through political and scientific systems. This study examines survey data collected from residents of eleven Oregon coastal fishing communities to identify the social and community values associated with commercial fishing. Results indicate that Oregon’s coastal residents view commercial fishing as socially and economically important in the past, present, and in the future, and that the heritage of the occupation should be maintained. The ability in which fisheries managers and decision-makers incorporate, integrate, and learn about social values associated with commercial fishing, may depend greatly on their understanding of how these values are embedded within communities.

Introduction

Fisheries managers and decision-makers in the Pacific Northwest region have a difficult if not impossible task of obtaining, interpreting and incorporating social and community values information into management decisions, as required by the amended Magnuson-Stevens Fishery Conservation and Management Act (M-SFCMA) or Magnuson-Stevens Act. The creation of the Sustainable Fisheries Act (SFA) amended the M-SFCMA in 1996. The amendment created eight regional fishery management councils that are responsible for creating fishery management plans (FMPs). The FMPs must conform to the National Standards as set forth in the Magnuson-Stevens Act. The Sustainable Fisheries Act also created three new National Standards, one of which (National Standard 8) mandates the consideration of fishery management impacts and conservation decisions on fishing communities. The National Standard 8 only refers to “economic” impact, while the definition of fishing community in the SFA refers to both “social and economic needs.” Managers and policy makers currently use economic, scientific, and political systems to identify the values that people associate with the natural environment. The publics’ perceptions and attitudes concerning natural resources are often disregarded because their significance and valuation are difficult to measure or identify (Sharp and Cramer, 1999). The resulting decisions often lack the publics’ perception or value system associated with the resource.

Currently if there is a proposed rule, the public, including fishers, is given opportunity to review and comment on any impact they consider to be important (CRS, 1995). However regional meetings are not always held locally, thus impeding the public participation process. But there are other barriers as noted by Pederson and Hall (1999:189) who state: "Too often, fishermen say that their observations, which are solicited in the public hearing process associated with the Councils' fishery management plan development, are dismissed as "anecdotal" and therefore considered to be without scientific credence."

It is not clear how managers can learn and incorporate local community and social values in order to comply with legislative requirements. Prior to addressing management perspectives, knowledge of community values must be clarified. The following analysis of survey data offers a starting point in clarifying what coastal communities value in terms of commercial fishing.

This paper examines the social values that residents of eleven Oregon coastal communities associate with the commercial fishing occupation and the commercial fishing heritage. Community and social values, as used in this study, refer to the attitudes, opinions, and beliefs held by fishers and non-fishers in commercial fishing communities. These values include sentiments about preserving existing ways of life, improving community services, attachment to place, maintaining the natural resource history of the area, and increasing economic opportunities.

Methods

In 1998 a survey titled Oregon Coastal Residents' Views on Community Issues was administered to examine how fishing livelihoods are rooted in residential communities. The Oregon communities that were surveyed include Astoria, Garibaldi, Tillamook, Depoe Bay, Newport, Florence, Coos Bay, Bandon, Port Orford, Gold Beach, and Brookings. These communities represent locations along the entire coastline of Oregon.

A total of 750 households were randomly selected among the eleven communities. The surveys were sent by mail, followed by postcards mailed to non-respondents. Surveys were sent to non-respondents a second time, then were subsequently telephoned in lieu of a third mailing (Dillman, 1978). Of the 750 households selected, 631 were counted as eligible (e.g., household member was a year-round resident and non-business). In total, 323 surveys were returned for a response rate of 51%. Respondents provided information about: (1) general community characteristics; (2) job skills and resources; (3) educational resources for children; (4) the role of commercial fishing in their community; and (5) general demographics.

Results

The questions selected for evaluation in this paper comprise only a portion of those used in the entire survey. In this report, responses to questions about employment within the fisheries industry, the importance of the commercial fishing

heritage, qualities of life, and local participation in fisheries management are evaluated. These questions were chosen to reflect the residents' perceptions specifically linked to the role of fishing in their community. In this paper we opted to evaluate responses on an "all communities combined" versus an individual community level when data suggests the same trends for both categories.

Respondent Characteristics

In all communities combined, the mean duration of residence was 25.8 years (median = 20 years), and the average age for all respondents was 62 years (Table 1.1). Of the 323 respondents who reported gender (2.2% did not report) 64% are male and 34% female, and almost half (46%) are currently employed. Of the 150 (46%) currently employed, 143 respondents listed their occupation. Twenty percent are employed in positions that involve natural resources (e.g., timber and forest products, agriculture, fishing, fish processing, etc.), while 80% are employed in other occupations. Of the 20% employed in positions that involve natural resources, five respondents are fishers and three respondents work within the fish processing sector. At least 32% have no college or some vocational education, and 65% have at least some college, a 4-year college education or higher.

Employment in Commercial Fishing

Community employment data is provided by the Oregon Economic

Table 1.1: Selected Demographics by Community

Category	Astoria N (56)	Garibaldi N (8)	Tillamook N (22)	Depoe Bay N (9)	Newport N (33)	Florence N (45)	Coos Bay N (68)	Bandon N (17)	Port Orford N (8)	Gold Beach N (9)	Brookings N (27)	Combined N (323)
Age												
Mean (yrs.)	58	64	60	61	57	64	61	57	61	57	67	60
Median (yrs.)	55	64	60	64	56	66	62	55	61	56	69	60
Length of Residence												
Mean (yrs.)	32	13	30	15	23	19	34	23	28	14	15	26
Median (yrs.)	25	9	26	6	17	13	36	20	28	15	10	20
Gender												
Male (%)	59.3	62.5	70.8	87.5	64.7	63.0	64.4	77.8	66.7	77.8	67.9	65.8
Female (%)	40.7	37.5	29.2	12.5	35.3	37	35.6	22.2	33.3	22.2	32.1	34.2
Education												
(% < H. S.)	29.3	50.0	41.7	37.5	27.3	31.1	40.8	26.7	22.2	25.0	29.3	33.3
(% < 2-yr. Degree)	43.1	12.5	37.5	37.5	27.3	40.0	38.0	33.3	55.6	50.0	37.0	37.9
(% > B.S.Degree)	27.3	37.5	20.8	25.0	45.5	28.9	21.1	40.0	22.2	25.0	33.3	28.8
Employment*												
Natural Resource	7	0	3	1	5	1	6	3	1	1	0	28
Non-Natural Resource	29	2	10	1	14	14	19	5	4	3	11	115

* Those that listed their occupation (143) were grouped into two categories: Employed within a natural resource occupation (e.g., forestry, timber, fishing, etc.) and non-natural resource occupation (e.g., banking, education, etc.).

Development Department (OEDD).¹ The OEDD combines agriculture, forestry and fishing as one category (Table 1.2) of employment. As a result of this combined categorization, specific fishing data cannot be assessed. Given the importance of fishing related jobs to Oregon coastal communities, employment in fish processing is included with OEDD data (column two).

In some communities employment rates change significantly when fish processing is added to the overall figures. Of the communities surveyed, Astoria, Newport, Bandon, Port Orford, Coos Bay, Gold Beach, and Brookings have one or more fish processing companies as a major employer. All the communities except the City of Florence list fishing as their principle industry (OEDD).

Respondents were asked to indicate the percentage of people they believe are employed in commercial fishing (fishers and fishery related processing) in their community (column three). The data reflects residents' perceptions about the number of people in these occupations that are important economic sectors in their community. For example, in Astoria employment in agriculture, forestry and fishing totals 4.4%. With fish processing added, the percentage increases to 10.2%. However, those surveyed indicated that they perceived employment in fisheries to be 22.5% within their community. In contrast, for the community of Gold Beach employment in agriculture, forestry and fishing totals 10.1%. Add fish processing

¹ The Oregon Economic Development Department or OEDD has been renamed The Oregon Economic Community Development Department or OECDD.

Table 1.2: Perceived and Actual Employment in Commercial Fishing by Community

Community	OEDD* % Employed in agriculture, forestry, and fishing	OEDD* % Employed in agriculture, forestry, fishing/fish-processing	Survey Respondents % You believe are employed in <u>only</u> fishing/fish-processing
Astoria	4.4	10.2	22.5
Garibaldi	15.5	15.5	40.9
Tillamook	3.3	3.3	19.4
Depoe Bay	6.5	6.5	11.6
Newport	6.0	32.7	27.1
Florence	4.7	4.7	10.1
Coos Bay	5.9	7.5	19.1
Bandon	5.8	15.1	13.5
Port Orford	22.9	41.6	22.6
Gold Beach	10.1	65.4	16.4
Brookings	4.6	7.2	20.7

*Source: Oregon Economic Development Department (OEDD) 1999.

and the percentage increases to 65.4%. However, residents surveyed in this community indicated that they perceive employment in fisheries only as 16.4%.

The respondents' range of perceptions about employment in fishing occupations are inconsistent with actual OEDD data. Most residents of any community lack first hand knowledge of exact employment data; yet are often expected to make decisions that affect economic development (e.g. zoning, infrastructure, etc.). This may suggest that the perceived or actual economic importance of commercial fishing and related employment may be overestimated or

underestimated within some communities, and may also reflect the social and cultural importance that residents attach to fishing.

Maintaining the Commercial Fishing Heritage

When asked to indicate whether or not their community should try to maintain the commercial fishing heritage of the area and how that could be accomplished, a very large percentage of respondents said yes (76.5%) to fishing, but respondents are less clear about *how* that might happen (Table 1.3). Respondents overwhelmingly felt that the commercial fishing heritage is an important aspect to their community culture and heritage.

Table 1.3: Should your community try to maintain the commercial fishing heritage of the area? (N = 323)

Yes	76.5 %
No	9.3
No Response	14.2

If Yes, then how?

Develop recreational opportunities	0.3 %
Involve fishermen in management	1.2
Develop new markets, industries	1.5
Economic balance (with fishing, tourism, other)	1.5
Hatcheries (more efficient use of)	2.2
Improve environment/habitat	4.3
Better management*	17.6
Miscellaneous	20.8

*(e.g. avoid unnecessary regulations, manage # of permits, sound catch management).

While none of the options given for maintaining the commercial fishing heritage yielded strong support among respondents, they most often suggested “better fisheries management” as a preferred strategy. The miscellaneous category was non-specific and included a wide variety of responses. As with many social issues, it is often easier to identify problems than to generate solutions and come to consensus on how the issues might be addressed.

Such dispersion of responses in knowing how to maintain the fishing heritage is not surprising given the current conditions in the PNW fisheries, the diversity of respondents, and that 97% of the respondents are not directly involved in the fishing industry. The conditions are such that for Oregon, Washington and California fisheries, stock depletion, shortened fishing seasons, numerous restrictions and implementation of disaster relief programs for salmon and groundfish fisheries have many communities struggling under the social and economic impacts of complex issues.

Of all respondents (323), only .03% (8 respondents) currently work in the fisheries sector, suggesting that the majority of those surveyed that are not employed within this sector, feel strongly about the current issues in fisheries within their own community. From the public's perspective, it is also evident that these complexities have management issues as a common denominator. But, for the communities surveyed, managing the fisheries means more than practicing good science. Though better fisheries management was the preferred strategy by respondents, developing solutions that integrate social, ecological, cultural and

economic aspects will not be an easy task. A “one size fits all” strategy will not work. When there are complex processes and high community expectations, a fundamental challenge to fisheries programs would likely involve better management, better science, and a long-term perspective (Bellamy, et al., 1999). As Acheson and Steneck (1997:826-7) state “...competent biologists and experienced fishers... have constructed what amount to different realities of the fishery, and that these differences are at the root of many disagreements between them concerning management.”

Perceptions About Future Viability Of Commercial Fishing

Residents in Oregon’s coastal communities are supportive of the commercial fishing heritage as previously indicated, and when asked if they see the percentage of people participating in commercial fishing decreasing or increasing in the future, most (84%) believed numbers would decrease (Table 1.4).

Table 1.4: Percentage of people in commercial fishing increasing or decreasing in the future (N=323) (%)

Increasing greatly	0.6
Increasing somewhat	0.6
No change	6.5
Decreasing somewhat	31.3
Decreasing greatly	53.3
Don't know	0.3
No response	7.4

Where respondents indicated a “decreasing greatly” or “decreasing somewhat” answer, their responses to “why” they thought so is reported and were grouped into themes as shown in Table 1.5. The highest percentage of respondents who provided answers to this question believe that “lack of fish” is the driving the decrease in fishing. This is followed by a large percentage that believes “rules and regulations” are also having a negative impact on the fishing industry.

Table 1.5: Responses to “why” the percentage of people in commercial fishing is decreasing somewhat or greatly in the future (N= 273)

Lack of fish/decreasing resources	44.3 %
Rules/Regulations	33.7
No Response	7.3
Miscellaneous issues	4.0
Economic issues (declining revenues)	3.3
Environmental issues (incl. habitat loss)	3.3
Multiple influences affecting access, availability	2.2
Political reason	1.8

The management of fisheries is not an exact science, but rather it extends to areas of uncertainty, and the outcome of decisions may create undesirable changes.

As Smith and Gilden (2000:6) state “...[since the] passage of the Magnuson Fishery Conservation and Management Act in 1976, salmon fishers have faced increasingly numerous, complex and restrictive fishing regulations...[resulting in] less fishing time and smaller catches.” More recently, revenues for PNW groundfisheries have sharply decreased during 1983-1999: Washington - \$19.9

million to \$9.6 million; Oregon - \$35.3 million to \$27.4 million; and California - \$44.9 million to \$15.9 million (PFMC, 2000). In a report from the Economic Subcommittee of the Pacific Fisheries Management Council (PFMC), the effectiveness of fisheries management practices has contributed to the overcapacity (exploitation) of the West Coast groundfish fishery . The report states that "... economic hardship and uncertainty being experienced by the industry is intensifying competition among fishery sectors for access to the resource" (PFMC, 2000:6).

Importance Of Commercial Fishing

Respondents were asked the importance of commercial fishing in the past, present, and future (Table 1.6). Most of the respondents (almost 85%) feel that fishing was important in the past, while 35.5% indicated that it was important now, and only 26% indicated that they believe commercial fishing will have some importance in the future. These results are not surprising given the historical significance of commercial fishing in Oregon and the high value that people in coastal communities attach to the historical and economic significance of the fisheries industry. The importance of commercial fishing may indicate how respondents view fishing as an industry of economic and cultural importance that provides the backdrop for tourism and recreation. For Oregon coastal communities, commercial fishing activities coexist with other economic activities. Results from a previous study (Cordray and Cramer, 1999) suggest that residents value the

backdrop of fisheries activities (e.g. tourism, recreational fishing and the aesthetic components of the coastal community environment).

Table 1.6: Ranking the importance of commercial fishing past, present and future (N=323)

	Past	Present	Future
Not at all important/slightly important	2.8 %	28.1 %	47.7 %
Neutral	8.4	31.3	20.4
Somewhat/Extremely important	84.6	35.5	26.3
No Response	4.2	5.4	5.6

Ranked on a scale of (1) Not at all important to (5) Extremely Important.

According to Cordray and Cramer (1999: 5) "...natural resource industries [such as fisheries] which make up the economic support for coastal communities are part of a larger system and dependent upon the economics and politics of that larger social system." The symbiotic relationship between commercial fishers and the rest of the community can be defined in terms of compatible planning and development support for both groups. For example, harbor and dock maintenance, additional parking for tourists near waterfront activities and shops, seasonal events that encourage participation of fishers, community business owners and residents, and educational opportunities that emphasizes the cultural history and fishing heritage, are compatible activities that support multiple economic industries. What

draws people to coastal communities (e.g. tourism, recreation) can also translate into economic opportunities for other businesses within the community.

Quality Of Life

Respondents were asked to indicate the level of importance about the future quality of life in their community (Table 1.7). Of interest in this study are variables used in social science literature that reflect the saliency of a variety of community issues, and perceptions about self and community well-being. Quality of life concepts refer to psychological, sociological, economic, and physical environmental concerns (Cramer, 1993).² Respondents were asked to score each item on a list of quality of life indicators using a scale from 1 (not at all important) to 5 (extremely important). Responses for all items leaned toward the “important” end of the scale, which would be expected given that people value and want better things for their community. Significant differences in the importance for maintaining the quality of life existed between the categories for all variables in combined means. Encouraging new recreation and tourist development yielded the lowest combined score for all communities. This may be due to the character of some communities that are geared towards retirement living, and that the influx of

² Quality of life indicators can also include other data (e.g., crime, demographics, ect.) See Cramer, 1993.

Table 1.7: Mean Values for the future quality of life variables¹

Importance of the following for maintaining the future quality of life in your community	Mean values for all Communities Combined N (302)
a) preserving existing ways of life	3.89 ^a
b) increasing economic opportunities for local residents	4.32 ^b
c) improving community public services	3.74 ^b
d) ability to influence state and federal decisions	4.16 ^b
e) limiting population growth	3.35 ^c
f) encourage new recreation and tourist development	3.26 ^d
g) maintaining the natural resource history of the area	4.26 ^b
h) improve and/or increase cultural activities	3.50 ^a

¹ Quality Of Life Variables scored on a scale of 1 (Not at all important) to 5 (Extremely important).

^a Preserving existing ways of life and improving public services are significantly different from all other Quality Of Life Variables at $p \leq 0.05$.

^b Increasing economic opportunities for local residents *and* Ability to influence state and federal decisions *and* Improving community public services are significantly different from all other Quality of Life Variables except Maintaining the natural resource history of the area at $p \leq 0.05$.

^c Limiting population growth is significantly different from all Quality of Life Variables except Encouraging new recreation and tourism *and* Improving and/or increasing cultural activities at $p \leq 0.05$.

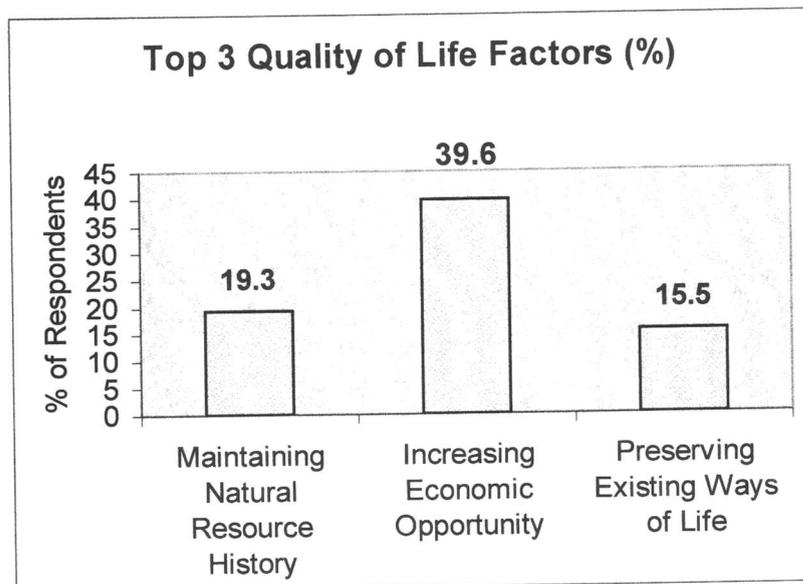
^d Encouraging new recreation and tourist development is significantly different from all Quality of Life Variables except Limiting population growth at $p \leq 0.05$.

people only during peak months does not guarantee a sustainable living for those that live within these communities year-round and dependent on a permanent economic base.

While economic opportunities associated with seasonal activity may benefit some, others may be hindered due to the sudden influx of people and the associated issues (e.g., increase use in services, crime, traffic, etc.). Further analysis of the variables on an individual community basis may also yield significant differences, but assessment of the scores would not be adequate without additional community level information. Although all the quality of life factors are important, we wanted to see how respondents prioritized these issues. When asked to select the top three quality of life factors, respondents indicated that “Increasing economic opportunity” (39.6%), “Maintaining the natural resource history of the area” (19.3%) and “Preserving existing ways of life” (15.5%), stand out as the most important (Figure 1.1). Given that respondents indicated they considered commercial fishing important to the future of their community and overwhelmingly preferred that the commercial fishing heritage be maintained, it is likely that respondents make an important association (economic, social, cultural) between the fishing industry and the community.

We also wanted to know if respondents prioritized these issues based on occupation, and to ascertain whether those directly employed and closely associated with natural resources differed in their responses from those that

Figure 1.1: Respondents ranking of the top 3 Quality of Life factors.



are not. Those that listed their occupation (143) were divided into two categories based on employment type: employment in a natural resource environment and non-natural resource environment. Twenty percent of those in a natural resource related occupation listed positions such as timber (forestry, wood products, etc.), agriculture, fishing, fish processing, recreational and environmental jobs, compared to 80% of those employed in other occupations (e.g. banking, services, education, healthcare, homemaker, etc.). Both groups (natural resource and non-natural resource employed) consider “Increasing economic opportunities” as most important, which is similar to combined responses from all respondents. Differences between groups emerged when asked to rank their second item of

importance, and both groups responded similarly with “Increasing influence with state and federal decisions” as the third item of importance (Table 1.8).

While 64% of those employed in a natural resource occupation indicated that preserving existing ways of life are important, respondents not employed in a natural resource occupation (56%) felt that maintaining the natural resource history of the area was also of importance. These results may be due to the character of Oregon’s coastal fishing communities and the economic importance of commercial fishing, and other natural resources. Both groups prioritized increasing influence with state and federal decisions also as important, and their responses may reflect that policies involving natural resources may not adequately consider input from local communities.

Participation In Fisheries Management

A final area of interest addresses respondents’ willingness to participate in community-level fisheries management efforts (e.g., attend planning meetings, participate on watershed councils, etc.). Willingness to participate on a community level effort indicates an interest in the sector by the respondent. Of all survey respondents, almost half (45.8%) said they would “not be willing” to participate, only a quarter (25.1%) said “yes” they would be willing, and 29.1% indicated a “no response” in these efforts. A sharp contrast exists between respondents indicating that the commercial fishing heritage of the area should be maintained (76.5%) and

Table 1.8: Ranking Quality of Life variables by employment in Natural Resource and Non-Natural Resource related occupation¹

Natural Resource Employed (N=28)			Non-Natural Resource Employed (N=115)		
Ranking		N (%)	Ranking		N (%)
1	Increasing economic opportunities for local residents	21 (75)	1	Increasing economic opportunity for local residents	86 (75)
2	Preserving existing ways of life	18 (64)	2	Maintaining the natural resource history of the area	64 (56)
3	Increasing influence with state and federal decisions	12 (43)	3	Increasing influence with state and federal decisions	41 (36)
4	Limiting population growth	9 (32)	4	Preserving existing ways of life	38 (33)
4	Maintaining the natural resource history of the area	9 (32)	5	Encouraging new recreation/tourist development	34 (30)
6	Encouraging new recreation/tourism development	6 (21)	5	Limiting population growth	34 (30)
6	Improve public services	6 (21)	7	Improve public services	26 (23)
8	Improve cultural activities	3 (11)	8	Improve cultural activities	22 (19)

¹ Frequencies of responses by those that listed their employment to the question: From the Quality of Life factors list, rank the top three items you think are most important for the future quality of life in your community. The table reflects the priorities of all variables compared to one another.

the level of interest in communities for their willingness to participate in the decision-making process on the community level. Although responses as to how the heritage should be maintained varied, better management was a preferred strategy. But when asked why the percentage of people in commercial fishing is decreasing in the future, management issues (rules, regulations, lack of fish, etc.), ranked among the highest responses. It is clear that communities want the commercial fishing heritage to be maintained, but as to how and who should maintain it is unclear from the responses. Attitudes about fishing resources are very strong, but maintaining the resource is very complex.

Although there is a gap between willingness to participate and actually participating in activities, the 25.1% that are willing suggests an interest or commitment in working with families, fisheries management, and community leaders on management issues. As to how they would be willing to help, those respondents that indicated “yes” most often reported that they would attend meetings, and/or volunteer with environmental projects and provide input. Of those willing to participate in fisheries management on a community level, most (14%) were between the ages of 45 and 65 years.

Discussion

The results of this survey carry important implications and opportunities for fisheries management and decision-makers, despite the diversity among fishers, diversity of fisheries, and coastal communities. Current and future fishery policy

must consider social and community impacts in management decisions if managers are to successfully comply with legislative changes as required in the amended Magnuson-Stevens Act (Gilden, 1999; CRS, 1995; Vanderpool, 1995).

Data collected in this survey describe the attitudes that Oregon's coastal communities have about their natural resources. Concerns about rules and regulations and better fisheries management rated high among most respondents, but the complexities (policy, lack of resources, stock assessment, etc.) of fisheries management may limit community involvement in terms of participation at the community level. Although respondents overwhelmingly indicated that the commercial fishing heritage should be maintained in the future, how to accomplish this goal is unclear.

Social concerns arise when the consequences of management decisions affect members of a fishery and the community. Fishers and their families invest significant resources in gear and equipment, and they invest in their community too. If they can no longer fish in one area, opportunities to fish elsewhere may be limited if there are strong social and community ties (Hanna and Smith, 1993). Closure or decreased access to a fishery may result in fishers needing to travel to other areas to fish, which in turn, requires more time at sea and less time at home with family (Gilden, 1999, Pollnac and Littlefield, 1983).

For those employed in fisheries, other family members are usually involved in the business. The loss of income for a family that is not diversified in other occupations can have serious consequences and may result in the need for

economic assistance. For a community of commercial fishers, loss of income can not only affect fishers, but others in the community dependent on the economic resource. The multiplier or ripple effect that can result from economic and social downturns, affect non-fishing related businesses as well. Changes in vessel ownership or permits may result in landings (catch) that are unloaded or processed elsewhere, thus jobs and potential revenue are lost to other communities. There is also less income to circulate within a community if fishery resources are lost.

For fishers who stay but no longer fish, transitioning into other occupations may be difficult. Oregon's coastal communities may not have the income opportunities or jobs that fit the skill sets of those in fisheries. The Federal Workforce Investment Act funds service delivery of re-employment and training assistance to displaced workers; however, most in transition need immediate income to support their families. For fishing communities in transition, utilizing these services prove difficult, especially if their reticence to transition is further complicated given the independent lives lead by fishers and their families (Gilden, 1999).

The economic impact will affect those that work within the fish processing sector as well as others within the community. For example, if the season is shortened or closed, fishermen may leave the area to fish elsewhere, thus reducing the amount of human capital available to the community. If people stay and can no longer fish, it strains existing social services such as unemployment, welfare, and government assistance programs (Cordray and Cramer, 1999).

The importance of commercial fishing, whether or not the heritage should be maintained in the future, and how fishing livelihoods are rooted in the residential community, have been described as significantly important to coastal communities and their residents. Because these values are viewed as important to those dependent on these resources, it becomes important to determine the extent to which fisheries/natural resource managers incorporate social and community values into their resource decisions. It may be the case that managers may need to find effective ways of identifying members of the community that are interested in natural resource management and community issues – to foster involvement from the fishing (occupational) community as well as the general public.

Because commercial fishing heritage is described as providing an important economic and non-economic backdrop within these communities, understanding the impact of policies becomes paramount. As resources continue to decline, the science and management of fisheries continue to be scrutinized. Although non-traditional methods of management are gaining foothold in some fisheries, differences in viewpoints continue to be problematic. Industrialization and technology advancements in fisheries resulting in increased competition for resources, bycatch and discard of non-target species, and public awareness have contributed to the complexities of fisheries management (Pikitch, et al., 1998).

The commercial fishing industry in the Pacific Northwest has a historical, economic and cultural significance. It is a resource that is managed intensively through economic, political, and scientific systems. To what extent social and

community values held by fishing communities are identified and integrated into fishery management decisions, is not well known. Additionally, there is little knowledge about the *process* by which this information is obtained or identified, or whether or not that information is useful - information that could increase the ability of decision-makers, policy makers and managers to comply with the spirit of the amended Magnuson-Stevens Act. As resource managers, local and political leaders look for solutions to policy issues, they may look to non-traditional, socially valued input from the community.

Decisions about natural resources are not always free from conflict, especially in a society that encourages public involvement (Bengston and Fan, 1999). The ability to incorporate local input may depend to a great extent on how management professionals embrace and understand social and community values and how they can be successfully integrated into management programs. It may not be the technical aspects of resource management that presents the biggest challenge, but rather the social influence and relationship between community infrastructure and their resource dependency (Sharp and Cramer, 1999).

References

- Acheson, J.M., and R. Steneck, 1997. Bust and Then Boom in the Maine Lobster Industry: Perspectives of Fishers and Biologist. *North American Journal of Fisheries Management* 17:826-847.
- Acheson, J.M., J.A. Wilson and R. Steneck. 1998. Managing Chaotic Fisheries. In *Linking Social and Ecological Systems*, eds. F. Berkes and C. Folke, pp.390-413. Cambridge: Cambridge University Press.
- Bellamy, J., G. T. McDonald, G. J. Syme, and J. Butterworth. 1999. Evaluating Integrated Resource Management. *Society & Natural Resources* 12(4):337-353.
- Bengston, D., and D. Fan. 1999. Conflict Over Natural Resource Management: A Social Indicator Based on Analysis of Online News Media Text. *Society & Natural Resources* 12(5):493-500.
- Congressional Research Service (CRS), 1995. Social Aspects of Federal Fishery Management. Report for Congress, NO. 95-553. April.
- Cordray, S. M. and L. A. Cramer. 1999. Resource reliance in a social context: human capital in fishing communities, businesses and families. Oregon Sea Grant College Program. Oregon Sea Grant Publishers, Project No. R/FDF-3.
- Cramer, L. A. 1993. Community responses to siting a hazardous waste facility: The case of the high-level nuclear waste facility at Yucca Mountain, Nevada. Unpublished dissertation. Utah State University, Logan, Utah.
- _____. 1999. Social and non-economic challenges in Pacific Northwest fishing communities. Forthcoming in Proceedings from Transformations in the Lives of Commercial Fishing Families and Communities: Reports from the Late Twentieth Century. 1999 Newell Seminar, Florida Sea Grant, Gainesville, FL.
- Darm, D. 2001. Testimony before the Senate Subcommittee on Oceans and Fisheries on The Pacific Coast Groundfish Fishery. Newport, January 16.
- Dillman, D. 1978. *Mail and Telephone Surveys: The Total Design Method*. New York: Wiley & Sons.
- Finlayson, A. C., and B. McCay. 1998. Crossing the threshold of ecosystem resilience: the commercial extinction of northern cod. In *Linking Social and Ecological Systems*, eds. F. Berkes and C. Folke, pp.311-337. Cambridge: Cambridge University Press.

- Gilden, J., (ed.) 1999. Oregon's Changing Coastal Fishing Communities. Oregon State University Sea Grant Program, ORESU-0-99-001. Corvallis, OR.
- Hall-Arber, M. and J. Pederson. 1999. Habitat Observed from the Decks of Fishing Vessels. *Fisheries* 24(6): 6-13.
- Hanna, S., and C. L. Smith. 1993. Attitudes of trawl vessel captains about work, resource use, and fishery management. *North American Journal of Fisheries Management* 13(2):367-375.
- Kennedy, J., and J. Thomas. 1995. Managing Natural Resources as a Social Value. In *A New Century for Natural Resource Management*, eds. R. Knight and S. Bates, pp.311-321. Washington: Island Press.
- Magnuson-Stevens Fishery Conservation and Management Act. 1996. Public Law 94-265. As amended 11 October 1996.
- Martin, C. 1985. The collapse of the northern cod stocks. *Fisheries* 20(3):6-8.
- Moore, R. 2001. Testimony before the Senate Subcommittee on Oceans and Fisheries on The Pacific Coast Groundfish Fishery. Newport, January 16.
- National Oceanic and Atmospheric Association. Commerce Secretary Daley announces West Coast groundfish fishery failure. Release no. NOAA 2000-R103. Washington, D.C.: 2000.
- Oregon Coastal Zone Management Association (OCZMA). Groundfish Disaster Plan Steering Committee Meeting. February, 2000.
- Pacific Fishery Management Council. 2000. Overcapitalization in the West Coast Groundfish Fishery: Background, Issues and Solutions – Draft Report. Document prepared by the PFMC Scientific and Statistical Committee. Portland, OR.
- Pederson, J. and M. Hall-Arber. 1999. Fish Habitat: A Focus on New England Fishermen's Perspectives. *American Fisheries Society Symposium* 22:188-211.
- Pikitch, E., J. Wallace, E. Babcock, D. Erickson, M. Saelens, and G. Oddsson. 1998. Pacific Habitat Bycatch in the Washinton, Oregon and California Groundfish and Shrimp Trawl Fisheries. *North American Journal of Fisheries Management* 18(3):569-586.
- Pollnac, R. and S. Littlefield. 1983. Sociocultural Aspects of Fisheries Management. *Ocean Development and International Law Journal* 12(3-4):209-246.

Sharp, S. and L. A. Cramer. 1999. Oregon Coastal Residents' View of Commercial Fishing and Implications for Natural Resource Managers. Paper presented at the Annual Meeting of the Pacific Sociological Association in Portland, OR, April.

Sharp, S. and L. A. Cramer. 2000. Social Values Associated With Commercial Fishing: What do fisheries managers need to know? Paper presented at the Annual Meeting of the Pacific Sociological Association in San Diego, CA, March.

Smith, C. and J. Gilden, 2000. Human and Habitat Needs in Disaster Relief for Pacific Northwest Salmon Fisheries. *Fisheries* 25(1):6-14.

Sustainable Fisheries Act. U.S. Public Law PL-104-297.

Vanderpool, C. K. 1985. Social Impact Assessment and Fishing Conservation and Management. In *Proceedings of the Workshop on Fisheries Sociology*. Technical Report. pp. 48-62.

MANUSCRIPT 2

Social Challenges in Managing Natural Resources in Coastal Fishing Communities:
A Survey of Program Leaders, Decision-makers and Organizations in Fisheries
Management in the Pacific Northwest

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Abstract

This paper summarizes responses from program leaders and managers in fisheries management to a questionnaire requesting information about the use of social and community values in decision-making. More specifically it investigates to what extent managers in the Pacific Northwest (PNW) region know about and incorporate the social values of commercial fishing communities, the means by which they obtain their information, what influences their knowledge, and the barriers in obtaining viable information. The commercial fishing industry in the Pacific Northwest has a historical, economic and cultural significance. It is a resource that is managed intensively through economic, political, and scientific systems. To what extent social and community values held by fishing communities are identified and integrated into fishery management decisions is not well documented. Managers indicated that they have frequent contact with fishers and members of the coastal community, but the type of information they receive and the lack of usable information makes it difficult to interpret comments, which then makes it difficult to integrate the information into decision-making. While most managers reported that they needed more social and community values information, they lack personnel and time to interpret the information. Written comments from respondents on the survey revealed significant differences of opinions about the use and value of social and community values information in fisheries management. This study examines the *process* by which this information is obtained and integrated, or whether or not that information is considered useful -

information that could increase the ability of decision-makers, policy makers and managers to comply with the spirit of the amended Magnuson-Stevens Act. This and future similar studies should provide opportunities to bring fisheries management issues to the forefront as strategic plans are being developed.

Introduction

The unique character of the fishing industry, its national importance, cultural significance, and economic capacity are referred to in the social aspects of Federal fishery policies. For more than 200 years, Federal policies have sought to take into account the significance of the industry to commercial fishing communities and society as a whole. However, social issues are not easily integrated into management plans that attempt to address such issues. The amended Magnuson-Stevens Fishery Conservation and Management Act (M-SFCMA, 1996) formally gave recognition of the need for examining social characteristics of fisheries. However, there are few personnel who have a direct role in agency policy-making and regulatory policy issues with the expertise or experience in the social sciences. Currently, there is only one social scientist/sociologist in the Headquarters Office of Sustainable Fisheries, National Marine Fisheries Service (NMFS) charged with social policy analysis and advice on fisheries management (Fricke, personal communication). There are two anthropologists on staff, one part-time and one full-time. Neither play a role in agency policy-making and regulatory policy issues, and both are employed outside of the Pacific Northwest. Without a framework to obtain, identify, interpret, and integrate social and community values information into fisheries management decisions, the data collected about communities and their values regarding natural resources have limited value.

Understanding and incorporating the values that fishers and non-fishers associate with their natural resource should have a direct bearing on the

management of that resource. Public participation is one of the ways in which community values and social concerns can be included in the management process, but interpreting and incorporating those values (the concerns and comments received from fishers and community members) into fishery management decisions becomes difficult if the public's value system is unfamiliar or ignored (Kennedy and Thomas, 1995). Currently, if there is a proposed rule, the public is given an opportunity to review and comment on any impact they consider to be important (CRS, 1995). Regional meetings, an important opportunity for face-to-face discussions, are not locally held in coastal communities, and geographic distance can become an immediate barrier to interpersonal communication in the decision process.

The relationships between fishers, fishery management, and non-fishers (residents of fishing communities) can play an important role in understanding and managing the complexities of fisheries. Fishers and non-fishers have direct information about their resource in the form of local (or traditional knowledge). Approaches to fisheries management have generally been scientific, technical, and often inflexible, and incorporating local knowledge has not always been utilized to its fullest extent. In some regions, fishers' knowledge is considered "anecdotal" thus lacking scientific merit (Hall-Arber and Pederson, 1999). Because of this, most data collection and current monitoring programs used by managers focus more on the "science" of the data to assess the effects of current and potential fishery management measures (PFMC, 2000). Fisheries managers use stock

assessment measures to calculate populations of fish and the amount of landings or Total Allowable Catch (TAC), in order to set fishing seasons, limits and re-estimate populations. These measures have been perceived as limited, inaccurate or incomplete (Darm, 2001; Moore, 2001; Acheson et al. 1998). Integrating stock assessment measures into decision-making has resulted in management policies having direct impacts that are not always favorable, not only in the fisheries, but also for fishers and fishing communities as well.

For example, in the Pacific Northwest (PNW), the salmon crisis and the declaration during the Groundfish Disaster Plan Steering Committee Meeting of February 2000 regarding the West Coast groundfish fisheries crisis, will have impacts that will be felt throughout the region (OCZMA, 2000). In January 2000, the federal government declared a failure for the groundfish fisheries. Groundfish catch limits have declined over the last five years, and fishermen have requested assistance for reducing fleet size. For several years, PNW fishers have also requested federal assistance in changing the regulations that affect by-catch. By-catch are groundfish (rockfish, lingcod, etc.) that are unintentionally caught when fishing for another species. The Pacific Fishery Management Council (PFMC), which sets ocean fishing limits in the PNW, estimated that the groundfish catch on the West Coast has declined from a 20-year average of 74,000 tons/yr. to less than 36,000 tons in 1999. In 2000 the catch is expected to be near 27,000 tons (NOAA, 2000). The losses to west coast fishermen have been estimated at approximately \$11 million in revenue, while the value of groundfish landings dropped from \$72 million in 1994 to \$52 million in 1998

(NOAA, 2000). Groundfish take a long time to mature and reproduce, which means a long-term recovery period for the various species. Species decline combined with traditional methods of fisheries management have left groundfish fishers and coastal communities with few viable alternatives for economic recovery.

Salmon fisheries in the Pacific Northwest also have experienced significant decline and hardship in the last 10 years. In 1994, a disaster relief package was implemented to assist salmon fishers in Washington, Oregon and California (Smith and Gilden, 2000). Increasingly complex regulations, loss or decline of habitat, and fishing overcapacity contributed to the decline (Smith and Gilden, 2000, Yoshiyama, et. al., 2000, Smith, et. al., 1997, Betts and Wolfe, 1992). The ability of fishing families to stay in business is difficult when fisheries are in crisis. If the season is shortened, fishers may leave the area to fish elsewhere. If gear type has to be changed in order for fishers to stay, they face financial strain. If people stay and can no longer fish, it will strain existing social services such as unemployment, welfare, and government assistance programs (Cordray and Cramer, 1999).

The declines in fisheries will affect some coastal communities harder than others if employment in the community is largely fishing related. Seven of the communities surveyed have one or more fish processing companies as the major employer. The efficiency with which we address the social and economic concerns may help minimize any potential negative impacts from management policies. When there are periods of economic instability due to the decline of the available resource, the ability of communities to react may be impeded (Krannich and Luloff,

1991). When there are circumstances that create unexpected change for fishers and their families, the period of adjustment can be overwhelming (Manoogian-O'Dell, et. al., 1998).

This report summarizes responses from fisheries managers and decision-makers about the use of social and community values information and the barriers that exist in obtaining and linking that information in natural resource decision-making. Opinions about the role of commercial fishing and the role of community in fishery management for the regions that are affected by the decisions they make are also documented.

Methods

Data for this report were collected by reviewing secondary literature, conducting unstructured in-person and phone interviews, and by mail survey. An eight-page questionnaire was designed and administered during March of 2000. The surveys were sent to a purposive and snowball sample of 100 fishery managers, decision-makers, and leaders in fishing organizations in the PNW region. The survey materials contained the questionnaire, cover letter, and return postage-paid envelope. Four weeks after the initial mailing, a full set of survey materials with a revised cover letter and return postage-paid envelope was mailed to non-respondents in lieu of a postcard reminder. The survey followed the protocol as recommended by Dillman (1978). In total, 69 surveys were returned for a response rate of 73%. The survey was divided into three sections: (1) the role of

commercial fishing and community in fishery management for the regions affected by the decisions of the agency or respondent; (2) the use of community and social values information in decision making; and (3) general demographics.

Significant information from respondents came from additional comments on the returned surveys. Of those that responded, 42% shared information concerning fisheries management issues, and complications in acquiring and interpreting community and social values information.

Results

The questions selected for evaluation in this paper comprise only a portion of those used in the entire survey. In this study, general demographics, responses to the process, issues and barriers in obtaining community and social values information in natural resource decision-making, and selected comments from managers are evaluated.

Respondent Characteristics

Most respondents (70%) resided within the community directly affected by the agency or organization where they are employed. Of all respondents (N = 69), 75% are men and 25% are women (Table 2.1). The average age for both men and women is 47 years old. Most respondents (88%) have a 4-year college degree or higher, with more women (94%) than men (86%) having a 4-year degree or higher. For all respondents, 52% had been in their present position 0-6 years. Only 19%

had held their position for 6.5 – 10 years, while 29% had been in their current position 10.5 years and longer. For confidentiality, we did not evaluate survey responses by job title.

Table 2.1: Selected Demographics of Managers/Decision-makers (N=69)

Category		Category	
Age		Length of time in present position	
Mean (yrs.)	47	Mean (yrs.)	7.2
Median (yrs.)	47	Median (yrs.)	6.0
Gender		Education	
Male (%)	75	(% ≤ H. S.)	2.9
Women (%)	25	(% ≤ 2-yr. Degree)	8.7
		(% ≥ B.S./B.A. Degree)	88.4

Access to Community and Social Values Information

The term “fishing community” as referred to in the Sustainable Fisheries Act (SFA), is defined as “[A] community which is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs” (PL-104-297 § 102). Moreover, the SFA requires through the National Standard 8, that conservation and management measures take into account the importance of fishery resources to fishing communities, and to minimize adverse impacts (PL-104-297 § 106). However, a fishing community is not just about fishing or economics. For fishers and non-fishers in coastal communities, fishing and ocean resources also represent expressions of social and community values. The commercial fishing industry has been described as

providing an important economic and non-economic (e.g. social, cultural) backdrop for Oregon's coastal fishing communities (Sharp and Cramer, 2001).

We asked respondents if they have access to information about community and social values for those communities that are affected by decisions made by their organization or agency. Most (82.6%) reported that they did have access to information while 14.5% did not. From a list that was provided (Table 2.2) we asked by which methods they are most likely to receive information about community and social values. An equal number (73.9%) indicated that they were most likely to acquire information from personal contact and the newspaper.

Table 2.2: Frequencies of managers responses to the questions: Indicate how you are most likely to receive community and social values information from the list provided; and, What makes the information credible? (N=69).

Method		What makes the information credible?	
Personal contact	73.9 %	Information comes from multiple sources	68.1 %
Newspaper	73.9	Source of information is verifiable	65.2
Local meetings	63.8	Manager knows individual personally	49.3
E-Mail	50.7	The problem was articulated clearly	47.8
PFMC hearings*	47.8	Probability of solving problem is likely	14.5
Agency publication	46.4	Other:	7.2
Community meetings	44.9	Letters and phone calls	
Conferences	44.9	Information from colleagues	
Television	33.3	Public meetings	
Social gatherings	30.4	Team and advisory panels	
Professional journals	30.4	The public that attends meetings	
Supervisor	24.6		
Other	17.4		

*PFMC (Pacific Fishery Management Council)

Having access to community and social values information does not mean that the information is usable, or that they have the capacity to understand social values information. Comments written on surveys and expressed in interviews reflect frustration about interpreting the e-mail and phone messages they receive. Typical comments on surveys and interviews included: "*The type of information or lack of usable information makes it difficult. There is no real way to make useful connections with fishers and Natural Resource management,*" and "*When things heat up, it gets bad. When there are allocation issues, I receive lots of irrational messages.*" Other frustrations from respondents indicated that they do not have the expertise to effectively interpret some of the messages they receive, and that some are too hard to understand because the issues are too complex.

Working from a provided list, we also asked respondents to consider how the information they obtain is given merit or can be substantiated. More than half (68.1%) reported that information is given merit when it comes from multiple sources, while 65.2% indicated that merit was related to a verifiable source (Table 2.2). Very few respondents (14.5%) considered "the probability of solving the problem as likely" as an indicator for how the information they obtain is given merit or substantiated. This may suggest that fisheries issues and possible solutions presented to managers and decision-makers could be problematic due to the format, timeliness, or clarity of the information being presented, regardless of whether they knew the individual. Respondents varied in opinion about the use of public information. One manager commented that "*I seldom know if the information is*

credible. I usually have to take it on faith that individuals are honestly reflecting expected impacts. I never have anything like a representative sample of community views.” While another manager noted that *“We need to get fishers more involved with providing input. As managers, we do value their input – because of the diversity of views – they need to tell their story...”*

Respondents indicated that they were moderately satisfied (51%) with information they currently receive, while 15.9% reported that they were only partially satisfied or not satisfied at all (Figure 2.1). Only 4.3% of respondents reported they “often” attain information in a timely manner, while 0% indicated that they “always” do. Similarly, a low percentage (18.8%) of respondents reported they “often” integrate information into decisions, 4.3% indicated they “always” do, and less than half (45%) indicate they “usually do” (Figure 2.2). One manager commented that *“...even though Magnuson [-Stevens Act] through National Standard 8 says the PFMC and other councils need to incorporate community impacts into their decision-making, none of the councils have done well at engaging/utilizing this analysis.”* If the capacity to understand social and community values information is limited by experience and expertise, and if the information is not considered credible by managers, then implementing the National Standard 8 will prove difficult.

Figure 2.1: Timeliness of social and community values information that managers and decision-makers receive. Ranking are on a scale from 1 to 5 in which (1) is Never and (5) is Always. Information is Satisfactory ranking on a scale of 1 to 5 in which (1) is No and (5) is Completely.

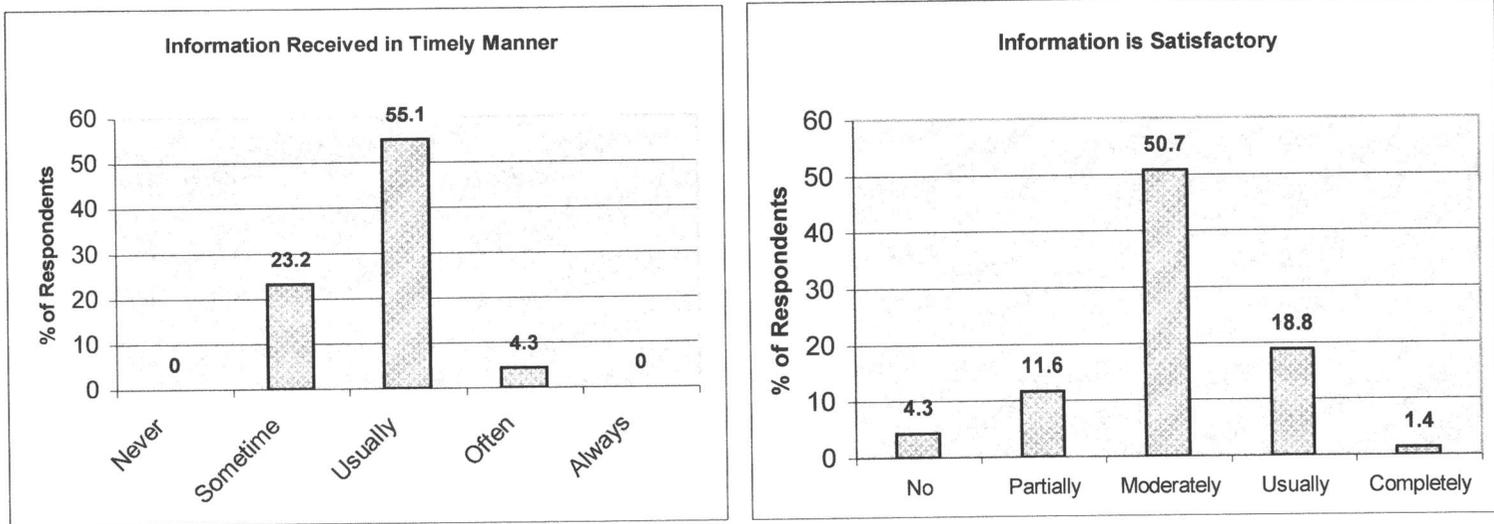
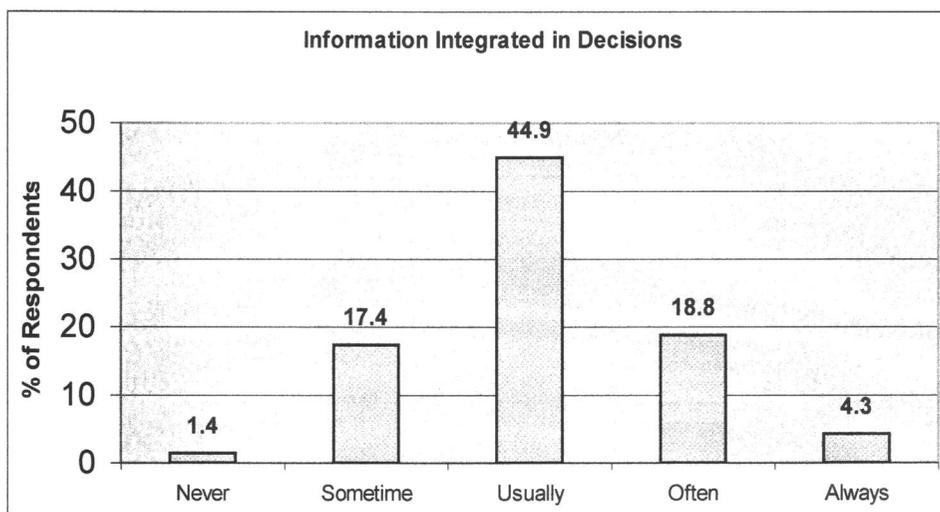


Figure 2.2: How often managers integrate information they receive into Decisions. Rankings are on a scale of 1 (Never) to 5 (Always).



Many managers responded to an open-ended question regarding barriers to getting information; most (65%) reported there were barriers of some kind, and that taking time to evaluate data (17.4%) stands out as the most significant issue (Table 2.3). Other barriers reported include missing or poor data on community and social values by 7.2% of the respondents. The miscellaneous category was varied and responses could not be grouped into themes. Although many responses emerged as barriers, those that were grouped into themes cover a wide range of categories. Having contact with the public was not viewed as a barrier. We asked managers how often they talk with people in the community about concerns regarding commercial fishing. The frequency they reported varied between daily (35%); weekly (25%); monthly (13%); and infrequently/never (25%).

Table 2.3: Whether or not there are barriers (time, format, quality) to receiving information, and the diversity of issues involved in receiving social and community values information. (N = 69).

Are there barriers to receiving community and social values information? (N=69)	
Yes	65.3 %
No	30.4
Don't know	1.4
No Response	2.9
<hr/>	
If YES , what are they?	
Takes time to evaluate data	17.4 %
Missing/poor data on community and social values	7.2
Information received too late	5.8
Geographic distance is a problem	4.3
Need more public response	2.9
Problems are different for each community	2.9
Information gets filtered too much	1.4
Objective scientific data are absent	1.4
Lack of fishery management options	1.4
Not enough staff to evaluate information	1.4
Information not shared in office	1.4
Miscellaneous	14.5

Respondents were asked if they needed more community and social values information, 58% said yes, 16% said no, and 25% indicated that they did not know if their organization or agency needed more information. While most managers reported that they needed more information, it is not clear how that information will be used, obtained, or who will be responsible for interpreting the data. Difference in viewpoints about whether social and community values information provide value in decision-making also emerged. Some managers cited that lack of information and personnel as an issue to utilizing and obtaining information: “*State*

and Federal agencies need to acquire base line data and employ trained personnel to assist fishing managers in interpretation of data.” One manager expressed a completely different viewpoint: “Resource agencies are not trained nor charged with the sociological implications...this is the job of human resource agencies and politicians...”

Social and Community Values in Decision-making

When queried about the importance of social and community values in the decision/policy making process (Table 2.4) 70% of the respondents report that this information is at least moderately important, with another 12% reporting it as extremely important.

Table 2.4: How important are social and community values in the decision and policy-making process?

	(%)
Not at all/somewhat important	16.9
Moderately/very Important	70.1
Extremely Important	12.3

Ranked on a scale of 1 (Not at all important) to 5 (Extremely important)

A high percentage (58%) of managers indicated that they needed more social and community values information, however as reported earlier, but less than half (45%) (Figure 2.2) indicated that the information they receive is integrated into management decisions. Social and community values information is considered important by fisheries managers, but agencies and organizations lack the personnel

to interpret and integrate this kind of information into decisions. One manager wrote: *“Incorporating community values in resource management is difficult because most Oregon coast communities have multiple and often conflicting value sets.”*

Impacts of Social and Community Values Information

The majority (90%) of respondents indicated the information they receive does have an impact on the decisions made, however the impacts vary as indicated by the range of responses received (Table 2.5). Comments such as “locals can advise on projects,” “informing the public,” and “meeting community needs” did not yield high responses. However, the highest percentage (28%) for any single specific impact, was regarding the modification of fish regulations. All other comments were non-specific (miscellaneous) and could not be grouped by themes. Interestingly, the highest responses in this case are not geared toward public involvement or community values, but rather towards regulations. Some managers indicated that their trust in the public’s knowledge about scientific issues was not very high, yet they indicated that social and community values are very important.

When asked if there was someone in their agency or organization who has the expertise to integrate or interpret social and community values information for use in decision-making, over half (51%) of the survey respondents reported a “no” or “don’t know” response. How managers are supposed to incorporate social values information if there is no one in agencies or organizations to do so, seems elusive.

Prior to receiving the survey, an interview with one of the respondents revealed difficulties in interpreting information: *“I get good notes at meetings, some e-mails, some good information...some is hard to understand because the issues are too complex, may be that I am not understanding what people are trying to tell me.”*

Table 2.5: How information about community and social values have impacted decisions. (N = 69).

	(%)
Modified fish regulations (policy)	27.5
Meet community needs	8.7
Our agency is required by law to review public comments	2.9
Locals can advise on projects	1.4
Managers allowed overharvest from political pressure	1.4
Fish hatcheries continue to operate	1.4
Informing the public	1.4
Miscellaneous*	37.7
Influenced our approach to problems	
Able to incorporate diversity of information	
Constrained our decisions to incorporate more limits	
Made us re-think how we communicate our decisions	

* Sample of responses to open-ended question. Miscellaneous category was non-specific and most responses could not be grouped into themes.

Understanding the significance of commercial fishing and the community - Maintaining the Commercial Fishing Heritage

Managers overwhelmingly felt that maintaining the commercial fishing heritage is an important aspect to Oregon's culture and heritage. But they are less clear about *how* maintaining the heritage might happen (Table 2.6).

Table 2.6: Managers response to: Should Oregon coastal communities maintain their commercial fishing heritage? (N = 69). How? (Open-ended question).

Yes	94.2 %
No	1.4
Don't Know	1.4
No Response	2.9
<hr/>	
If YES, then how?	
Reliable stock assessments	1.4 %
Prudent management	1.4
Educate the public	2.9
Habitat Conservation	2.9
Diversify	4.3
Initiate community quotas to sustain fisheries	4.3
Don't know	7.2
Limit exploitation of resources	8.7
Promote sustainable fisheries	10.1
Miscellaneous*	17.4
Smaller fleets	23.2
No response	15.9

*Miscellaneous category was non-specific and could not be grouped into themes.

Oregon Coastal Residents response to: Should your community try to maintain the commercial fishing heritage of the area? (N = 323). How? (Open-ended question).

Yes	76.5 %
No	9.3
No Response	14.2

If Yes, then how?

Develop recreational opportunities	0.3 %
Involve fishermen in management	1.2
Develop new markets, industries	1.5
Economic balance (with fishing, tourism, other)	1.5
Hatcheries (more efficient use of)	2.2
Improve environment/habitat	4.3
Better management*	17.6
Miscellaneous	20.8

*(e.g., avoid unnecessary regulations/rules, sound catch management).

When asked to indicate whether or not Oregon coastal communities should try to maintain the commercial fishing heritage of the area, a very large percentage of respondents said yes (94%), which was similar (76.5%) to responses in the 1998 survey of Oregon Coastal Residents' Views on Community Issues for the same question (Sharp, 2001:17). Manager's suggestions for maintaining the commercial fishing heritage were varied. They most often suggested "smaller fleets" as a preferred strategy. An unexpected and unanticipated result was that very few managers suggested prudent management (1.4%) and reliable stock assessments (1.4%) as options for maintaining the commercial fishing heritage. This was unexpected given that stock assessment measures are still used consistently in many fisheries (although they have been criticized as an inaccurate management tool) (Darm, 2001; Moore, 2001; Acheson et al. 1998). It was also unanticipated that prudent management received a low response although this may reflect how complex regulations and rules have lead to overcapacity, which has resulted in sharp declines in salmon and groundfish fisheries in the Pacific Northwest (Smith and Gilden, 2000, Yoshiyama, et.al., 2000, Smith, et. al., 1997, Betts and Wolf, 1992).

Managers are supportive of the commercial fishing heritage, but indicate that the number of people involved in fishing would decrease in the future as did residents in the survey of Oregon Coastal Residents' Views on Community Issues (Sharp, 2001: 22).

Perceptions about the viability of Commercial Fishing

About 41% of managers and 55% of community members reported they thought the number of people in commercial fishing would “decrease greatly” in the future. In both surveys, less than 2% of respondents felt the number in commercial fishing would “increase greatly” in the future. Residents viewed “lack of fish,” and “rules and regulations” (68% combined) as most responsible for the decrease. Similarly managers reported declining resources/exploitation/over fishing (49%) as the reason for the decrease. Managers also reported decreases in total allowable catch and decreasing groundfish populations as other causes for the decline in commercial fishing. The complexities in fisheries management and the perceptions that coastal residents have about their resources would indicate that both groups see significant problems with the fisheries in general. However, considerable differences emerge when respondents from both groups were asked to indicate how the heritage should be maintained, and ultimately their role in the future of fisheries management.

The Role of the Public in Fisheries Management

Managers were asked to consider what would be a realistic role for the general public in fisheries management. The question included a checklist of possible types of involvement from the community:

- None, let the resource professionals (e.g., Department of Fish and Wildlife) decide
- Provide suggestions and let the resource professionals decide
- Serve on advisory boards that review and comment on decisions

- Act as a full and equal partner in making management decisions
- The public should decide management issues and resource professionals should carry them out
- Other

Respondents most often suggested (78%) that the public should serve on advisory boards that review and comment on decisions. The majority (83%) did not feel that community members should act as full and equal partner. When asked if fishery management should be conducted at the community level, 32% said yes. When asked how that should happen, over 68% did not respond. The highest specific response by managers was “educating the public” (6%). Co-management activities may yield a low response rate by managers given that public involvement is yielding low responses in several survey categories.

Discussion

The process by which social and community values information is obtained and integrated in fisheries management is unclear, largely because it appears that managers have not decided whether such information is useful. A small number of managers (25.7%) report that some rules and regulations have been “modified” with the integration of public values. It may be the case that because fisheries management agencies and organizations in the Pacific Northwest lack the expertise and personnel to integrate social and community values into policy or decision-making, that they are reluctant to devote time and resources collecting and interpreting such data. Fishers themselves have direct knowledge about their

resources, but there is currently no systematic method for collecting this information. When managers do receive information, they report that it is not always usable and some messages they describe as “irrational.” Although most managers are at least moderately satisfied with the information they receive through personal contact with community members, they recognize that they lack the expertise to evaluate and/or use the information.

Written comments from respondents revealed significant differences of opinions about the use and value of social and community values information. The following are comments from managers and decision-makers that reflect current issues dealing with social and community values information in fisheries management:

(1) *“Decision/policy making should be based on sound biological data. Sometimes residents (local) don’t understand the biological data and a lot of decisions are based on emotions not facts. It would appear that there is a lack of communication between professionals and locals prior to decision making.”*

(2) *“Fish management bodies need socio/economic data to understand the social/political/economic impact of their decisions. Classical social data are almost entirely missing from the current process. University faculty, staff should be encouraged (funded) to work on these problems.”*

(3) *“We should not let community and social values of state residents dictate harvest regulation, although it should be taken into consideration. The general public has a history of allowing overharvest of natural resources.”*

Managers indicated that the information they receive has an impact on the decision-making process in various ways, but few indicated that those impacts were geared toward public involvement or community values. Although most managers

reported that social and community values were moderate to extremely important, ways to incorporate the information is lacking in the existing decision-making process. The 1995 Report for Congress on the “Social Aspects of Federal Fishery Management,” states that “The role of the SSC [*Scientific and Statistical Committee*] in the development, collection, and evaluation of such statistical, biological, economic, social, and other scientific information...does not require a representative from the social science field” (CRS, 1995:7) [Italics not in original]. While the amended M-SFCMA formally gave recognition for the need to examine the social characteristics of fisheries, this study suggests that managers themselves do not have the capacity to collect, interpret, or integrate such information in their decision-making process.

References

- Betts, M., and R. Wolf. 1992. Commercialization of Fisheries and Subsistence Economies of the Alaska Tlingit. *Society & Natural Resources* 5(3): 277-295.
- Congressional Research Service (CRS), 1995. Social Aspects of Federal Fishery Management. Report for Congress, NO. 95-553. April.
- Cordray, S. M. and L. A. Cramer. 1999. Resource reliance in a social context: human capital in fishing communities, businesses and families. Oregon Sea Grant College Program. Oregon Sea Grant Publishers, Project No. R/FDF-3.
- Darm, D. 2001. Testimony before the Senate Subcommittee on Oceans and Fisheries on The Pacific Coast Groundfish Fishery. Newport, January 16.
- Dillman, D. 1978. *Mail and Telephone Surveys: The Total Design Method*. New York: Wiley & Sons.
- Hall-Arber, M. and J. Pederson. 1999. Habitat Observed from the Decks of Fishing Vessels. *Fisheries* 24(6): 6-13.
- Fricke, P. 2001. Personal Communication. March 3.
- Kennedy, J., and J. Thomas. 1995. Managing Natural Resources as a Social Value. In *A New Century for Natural Resource Management*, eds. R. Knight and S. Bates, pp. 311-321. Washington: Island Press.
- Krannich, R. and A.E. Luloff. 1991. Problems of resource dependency in US rural communities. In *Progress in Rural Policy and Planning*, ed. A.W. Gilg, pp. 5-18 London: Belhaven Press.
- Magnuson-Stevens Fishery Conservation and Management Act. 1996. Public Law 94-265. As amended 11 October 1996.
- Manoogian-O'Dell, M., McGraw, L. and A. Zyorkovic. 1998. Adapting to Change: The Ebb and Flow of Fishing Family Life. Oregon State University Sea Grant Program, ORESU-G-98-002. Corvallis, OR.
- Moore, R. 2001. Testimony before the Senate Subcommittee on Oceans and Fisheries on The Pacific Coast Groundfish Fishery. Newport, January 16.
- Pacific Fishery Management Council (PFMC). 2000. Final Groundfish Fishery Strategic Plan Executive Summary. October.

Sharp, S. 2001. Social Challenges in Managing Natural Resources in Coastal Fishing Communities: Oregon Coastal Residents Views. Oregon State University, Master's thesis.

Smith, C. and J. Gilden, 2000. Human and Habitat Needs in Disaster Relief for Pacific Northwest Salmon Fisheries. *Fisheries* 25(1):6-14.

Smith, C., J. Gilden, J. Cone, and B. Steel. 1997. Oregon Coastal Salmon Restoration: Views of Coastal Residents. Oregon State University Sea Grant Program, ORESU-S-97-001. Corvallis, OR.

Sustainable Fisheries Act. 1996. PL-104-297.

Yoshiyama, R., E. Gerstung, F. Fisher, and P. Moyle. 2000. Chinook Salmon in the California Central Valley: An Assessment. *Fisheries* 25(2):6-20.

SUMMARY

The values that Oregon coastal communities attach to the commercial fishing heritage has been described as important by respondents of eleven coastal communities surveyed. The historical and economic importance of fishery resources are reflected in coastal community residents' sentiments about preserving existing ways of life, maintaining the natural resource heritage of the community, and attitudes and opinions about natural resources.

The results of the two surveys evaluated in the two manuscripts carry important implications and opportunities for fisheries management, despite diversity among fishers, fisheries, communities, and organizations. Current and future fisheries managers must consider social and community impacts in management decisions if managers are to successfully comply with legislative changes as those imposed by the amended Magnuson-Stevens Act.

Minimizing the potential negative impacts of fisheries policy on coastal communities will be increasingly important as the fishing industry continues to decline and transition. Programs exist to support members and families of some fisheries (e.g. North Atlantic cod, PNW salmon and groundfish); however programs to incorporate the impacts on non-fishing community members are lacking.

In Oregon, social and economic support to fishing communities, fish processors, fishing families and businesses is underway via a comprehensive plan known as the West Coast Groundfish Crisis Plan. This year the Oregon Coastal

Zone Management Association brought together individuals from fisheries, management and government to propose a relief program for Oregon, Washington and California. The program was granted \$5 million by the federal government, with Oregon obtaining \$1.75 million for community and family support.

Recommendations for the plan included:

- Outreach – Hiring a disaster relief coordinator for outreach and affected communities
- Providing access for family and financial counseling
- Removing barriers for those leaving the fishing industry (unemployment relief, opportunity to complete an education, subsidies for those transitioning from fisheries (except buy-back))
- Providing outreach for those remaining in fisheries

The changes in fisheries will affect some coastal communities harder than others, and the effectiveness in which social and economic concerns are addressed may help minimize possible negative impacts.

Fishers may have years of experience, but according to fisheries management, such local knowledge lacks scientific merit, although they do not have a systematic means to evaluate the information. If managers involve fishers and community members in the decision-making process, they will need to know or acknowledge diverse community opinions, including community desire for better management. More than 25% of community respondents indicated they would be willing to participate in some form of volunteerism. Though better fisheries management was a preferred strategy by respondents, creating integrated solutions that include ecological, cultural and economic aspects will not be an easy task, especially if there is no one charged with that responsibility. The ability to

incorporate social and community data and local input may depend to a great extent on how management professionals embrace and understand social concerns and values.

It is not surprising that the importance of the commercial fishing heritage in the past was reported in both surveys, given the historical context of commercial fishing in Oregon, and that residents and managers desire that the heritage should be maintained. Differences of opinions about how that should happen were reported in both surveys. While the community survey indicated that better management was preferred, reducing fleet size was reported as the preferred strategy by managers. Neither group suggested a collaborative approach to fisheries management, although when asked, some community members indicated that they would be willing to volunteer to participate in fisheries management. Although community residents would be willing to participate in the decision-making process, managers did not see community members as full and equal partners. Managers suggested overwhelmingly that community members could advise and comment on decisions *after* the decisions are made.

Managers indicated they need more community and social values information, but less than half of the information they do receive is incorporated into decisions. It shouldn't be expected that all information that managers receive would be usable or practical in decision-making. However, community and social values information will have little value if there is no one in fisheries management than can obtain, interpret and integrate the information.

BIBLIOGRAPHY

- Acheson, J.M., and R. Steneck, 1997. Bust and Then Boom in the Maine Lobster Industry: Perspectives of Fishers and Biologist. *North American Journal of Fisheries Management* 17:826-847.
- Acheson, J.M., J.A. Wilson and R. Steneck. 1998. Managing Chaotic Fisheries. In *Linking Social and Ecological Systems*, eds. F. Berkes and C. Folke, pp.390-413. Cambridge: Cambridge University Press.
- Bellamy, J., G. T. McDonald, G. J. Syme, and J. Butterworth. 1999. Evaluating Integrated Resource Management. *Society & Natural Resources* 12(4):337-353.
- Bengston, D., and D. Fan. 1999. Conflict Over Natural Resource Management: A Social Indicator Based on Analysis of Online News Media Text. *Society & Natural Resources* 12(5):493-500.
- Betts, M., and R. Wolf. 1992. Commercialization of Fisheries and Subsistence Economies of the Alaska Tlingit. *Society & Natural Resources* 5(3): 277-295.
- Congressional Research Service (CRS), 1995. Social Aspects of Federal Fishery Management. Report for Congress, NO. 95-553. April.
- Cordray, S. M. and L. A. Cramer. 1999. Resource reliance in a social context: human capital in fishing communities, businesses and families. Oregon Sea Grant College Program. Oregon Sea Grant Publishers, Project No. R/FDF-3.
- Cramer, L. A. 1993. Community responses to siting a hazardous waste facility: The case of the high-level nuclear waste facility at Yucca Mountain, Nevada. Unpublished dissertation. Utah State University, Logan, Utah.
- _____ 1999. Social and non-economic challenges in Pacific Northwest fishing communities. Forthcoming in *Proceedings from Transformations in the Lives of Commercial Fishing Families and Communities: Reports from the Late Twentieth Century*. 1999 Newell Seminar, Florida Sea Grant, Gainesville, FL.
- Darm, D. 2001. Testimony before the Senate Subcommittee on Oceans and Fisheries on The Pacific Coast Groundfish Fishery. Newport, January 16.
- Dillman, D. 1978. *Mail and Telephone Surveys: The Total Design Method*. New York: Wiley & Sons.

- Finlayson, A. C., and B. McCay. 1998. Crossing the threshold of ecosystem resilience: the commercial extinction of northern cod. In *Linking Social and Ecological Systems*, eds. F. Berkes and C. Folke, pp.311-337. Cambridge: Cambridge University Press.
- Fricke, P. 2001. Personal Communication. March 3.
- Gilden, J., (ed.) 1999. Oregon's Changing Coastal Fishing Communities. Oregon State University Sea Grant Program, ORESU-0-99-001. Corvallis, OR.
- Hall-Arber, M. and J. Pederson. 1999. Habitat Observed from the Decks of Fishing Vessels. *Fisheries* 24(6): 6-13.
- Hanna, S., and C. L. Smith. 1993. Attitudes of trawl vessel captains about work, resource use, and fishery management. *North American Journal of Fisheries Management* 13(2):367-375.
- Kennedy, J., and J. Thomas. 1995. Managing Natural Resources as a Social Value. In *A New Century for Natural Resource Management*, eds. R. Knight and S. Bates, pp.311-321. Washington: Island Press.
- Krannich, R. and A.E. Luloff. 1991. Problems of resource dependency in US rural communities. In *Progress in Rural Policy and Planning*, ed. A.W. Gilg, pp. 5-18 London: Belhaven Press.
- Magnuson-Stevens Fishery Conservation and Management Act. 1996. Public Law 94-265. As amended 11 October 1996.
- Manoogian-O'Dell, M., McGraw, L. and A. Zyonkovic. 1998. Adapting to Change: The Ebb and Flow of Fishing Family Life. Oregon State University Sea Grant Program, ORESU-G-98-002. Corvallis, OR.
- Martin, C. 1985. The collapse of the northern cod stocks. *Fisheries* 20(3):6-8.
- Moore, R. 2001. Testimony before the Senate Subcommittee on Oceans and Fisheries on The Pacific Coast Groundfish Fishery. Newport, January 16.
- National Oceanic and Atmospheric Association. Commerce Secretary Daley announces West Coast groundfish fishery failure. Release no. NOAA 2000-R103. Washington, D.C.: 2000.
- Oregon Coastal Zone Management Association (OCZMA). Groundfish Disaster Plan Steering Committee Meeting. February, 2000.

Pacific Fishery Management Council (PFMC). 2000. Final Groundfish Fishery Strategic Plan Executive Summary. October.

_____ 2000. Overcapitalization in the West Coast Groundfish Fishery: Background, Issues and Solutions – Draft Report. Document prepared by the PFMC Scientific and Statistical Committee. Portland, OR.

Pederson, J. and M. Hall-Arber. 1999. Fish Habitat: A Focus on New England Fishermen's Perspectives. *American Fisheries Society Symposium* 22:188-211.

Pikitch, E., J. Wallace, E. Babcock, D. Erickson, M. Saelens, and G. Oddsson. 1998. Pacific Habitat Bycatch in the Washinton, Oregon and California Groundfish and Shrimp Trawl Fisheries. *North American Journal of Fisheries Management* 18(3):569-586.

Pollnac, R. and S. Littlefield. 1983. Sociocultural Aspects of Fisheries Management. *Ocean Development and International Law Journal* 12(3-4):209-246.

Sharp, S. 2001. Social Challenges in Managing Natural Resources in Coastal Fishing Communities: Oregon Coastal Residents Views. Oregon State University, Master's thesis.

Sharp, S. and L. A. Cramer. 1999. Oregon Coastal Residents' View of Commercial Fishing and Implications for Natural Resource Managers. Paper presented at the Annual Meeting of the Pacific Sociological Association in Portland, OR, April.

Sharp, S. and L. A. Cramer. 2000. Social Values Associated With Commercial Fishing: What do fisheries managers need to know? Paper presented at the Annual Meeting of the Pacific Sociological Association in San Diego, CA, March.

Smith, C. and J. Gilden, 2000. Human and Habitat Needs in Disaster Relief for Pacific Northwest Salmon Fisheries. *Fisheries* 25(1):6-14.

Smith, C., J. Gilden, J. Cone, and B. Steel. 1997. Oregon Coastal Salmon Restoration: Views of Coastal Residents. Oregon State University Sea Grant Program, ORESU-S-97-001. Corvallis, OR.

Sustainable Fisheries Act. 1996. PL-104-297.

Vanderpool, C. K. 1985. Social Impact Assessment and Fishing Conservation and Management. In *Proceedings of the Workshop on Fisheries Sociology*. Technical Report. pp. 48-62.

Yoshiyama, R., E. Gerstung, F. Fisher, and P. Moyle. 2000. Chinook Salmon in the California Central Valley: An Assessment. *Fisheries* 25(2):6-20.